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EXAMINER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 12

Application Number: 09/934,962
Filing Date: August 22, 2001
Appellant(s): Krishnamachri

MAILED

APR 08 2003

Technology Center 2600

Robert M. McDermott
For Appellant

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed December 6, 2002.

(1) ***Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

(2) ***Related Appeals and Interferences***

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) ***Status of Claims***

The statement of the status of the claims contained in the brief is correct.

(4) ***Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct. The amendment after final rejection was not entered.

(5) ***Summary of Invention***

The summary of invention contained in the brief is correct.

(6) ***Issues***

The Appellant's statement of the issues in the brief is not correct. Appellant's statement includes 1) "in view of Sato et al. (USP 6,181,818, hereafter Sato?);" 2) "in view of Sato?". The correct issue is whether are claims 1-20 correctly rejected under 35 USC 102 (e) as **being** anticipated by US 6181818 to Sato et al.

(7) ***Grouping of Claims***

The rejection of claims 1-20 stand or fall together.

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is not correct because the amendment of after advisory action did not entered.

(9) *Prior Art of Record*

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

US 6,181,818

Sato et al.

1-2001

(10) *Grounds of Rejection*

The following ground(s) of rejection are applicable to the appealed claims.

Remark

Applicant's arguments with respect to claims 1-20 have been fully considered, but they are not persuasive.

Applicant argues that "Sato does not perform a comparison of frequency of occurrences of colors in each region of an image, as specifically claimed" in the claims. Also, "each frequency of occurrence is used to determine whether an entry is to be made to the index table. Once the entry is made, or not, the frequency of occurrence is not used again".

Examiner disagrees. As well known concept in the image processing, frequency of occurrences (pixels) is characterized by the histogram. Sato discloses "calculates the color histogram of pixel data in units of blocks" (col. 25, lines 46-47, note that this is the local histograms of blocks). In addition, Sato teaches using a feature vector C_i , which formed by

counting the number of pixels in a range (frequency of occurrence, Fig. 43, col. 25, 51-62). Furthermore, Sato discloses determining a index table by comparing C_i which is representation of the frequency of occurrences of a block (region) to a threshold to form an index table. The index entry is C_i (Fig. 45). Then, contrast to Applicant's assertion "the frequency of occurrence is not used again", Sato further discloses searching the image in a database by comparison the index table (col. 27, lines 15-25, note that Fifth embodiment which details the sixth embodiment (col. 24 lines 4-26) teaches comparing the colors (in here, C_i of a region is the color and also represents the frequency of occurrences). Thus, the high speed image searching is achieved. Therefore, Sato indeed discloses the limitation of claims which comparing the frequency of occurrence of a selected set of colors (C_i) in each first partition (block) with the frequency of occurrence of a corresponding selected set of colors in each second partition.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6181818 to

Sato et al.

As to claim 1, Sato discloses a method for charactering an image comprising:

partitioning the image into a plurality of partitions with color pixels (col. 25 lines 25-50);

and

determining a frequency of occurrence of each color within the partitions (col. 25 , lines 46-50).

creating a characterization that includes a plurality of measures that are proportional to the frequency of occurrence of a plurality of colors (Fig. 43, col. 25, lines 56-62, note that C_i is the characterization).

As to claim 2, Sato further discloses quantizing the color (col. 25 lines 51-62).

As to claim 3, Sato further discloses the steps of:

identifying colors based on the local color histograms (col. 25 lines 46-50); and

the plurality of measures (C_i) includes proportions of each of the plurality of populous colors (number of pixels for each color) in each partition (Fig. 43, col. 25, lines 12-62).

As to claim 4, Sato further discloses the steps of:

identifying the color centers (col. 30 lines 15-23); and

determining the color based on the color distance (col. 30 lines 15-40 and col. 24, lines 4-19).

As to claim 5, the discussion is addressed with regard to claim 3.

As to claim 6, Sato discloses a method of comparing a first image to a second image, comprising:

partitioning first and second image (col. 25, lines 12-45, note that the blocks is the partitions);

determining/creating local color histograms for the partitions (col. 25 line 46-col 26 line 61, See remark); and

comparing the color histograms of the two images (col. 25, line 47-col. 28 line 20, see

remark).

As to claims 7-10, the discussions are addressed with regard to claim 2-4.

As to claims 11-15, the discussions are addressed with regard to 1-10.

As to claim 16, Sato discloses a system for comparing a first image to a second image, comprising,

a similar color determinator (col. 27 line 41-col. 28 lines 20) that is to determine:

a mapping between two set of colors of the two images (col. 24 lines 4-37, col. 28 lines 3-20, and col. 30, lines 16-40, see remark); and

the similarity determinator comparing the two images based on the local histograms to determine the similarity measure (col. 24 lines 4-37, col. 28, lines 3-20 and col. 30, lines 16-40, see remark).

As to claim 17, Sato further discloses the accumulator (buffer 246) to provide the image similarity measure (col. 28, lines 3-20), other elements are addressed with regard to claim 16.

As to claim 18, Sato further discloses the similarity measure is determined by calculating the color distances (col. 24 lines 3-19 and col. 28 lines 3-20).

As to claims 19-20, the discussions are addressed with regard to 2-4.

(11) Response to Argument

(A) The following discussion relates to the rejection of claims 1-20 under 35 U.S.C. §102 as being anticipated by Sato et al.

1. Appellants' arguments -- Appellant argues that regarding claims 1-5 and 11-15, Sato “does not create a characterization measure that is **proportional** to these frequencies of occurrences”, further, “Sato does not teach the inclusion of the particular percentage of the color of each blocks in the index table. ----because Sato does not store the proportion in the table.”, and finally, Sato’s “index table contains names of blocks only, does not contain a measure that is proportional to frequency of occurrences of a color,”

Examiner's response --The Examiner does not agree with Appellant.

First, Appellant seems to completely ignore the office action given by the Examiner in paper #5 that also presented in section 10 of this answer. The Examiner has given detailed explanation what is the Examiner's understanding of the claim language and how the claim language is anticipated by Sato's disclosure. For example, the Examiner specifically mention that Sato discloses “creating a characterization that includes a plurality of measures that are proportional to the frequency of occurrence of a plurality of colors (Fig. 43, col. 25, lines 56-62, note that C_i is the characterization)” (quoted from the office action). The Examiner clearly express that the color C_i is the characterization and Fig. 43 that teaches that a local (block) histogram is utilized for creating the characterizations C_i “by counting number of pixels within the range (d_i-1, d_i+1) in the histogram” (Sato, col. 25 lines 57-58).

Furthermore, regarding the argument of “particular percentage of the color of each blocks”, the claim does not contain such language of “particular percentage of the color of each blocks”. The Examiner would like to point out that claim language is given its broadest

reasonable interpretation. The specification is not measure of invention. Therefore, limitations contained therein can not be read into the claims for the purpose of avoiding the prior art. *Ir re Sporck*, 55CCPA 743, 386 F. 2d 924, 155 USPQ 687 (1968). What language in the claim is “proportional to the frequency of occurrence of a plurality of colors”. There is no claim language of ““particular percentage of the color of each blocks” as argued by the Applicant. Moreover, as mentioned above, Sato clearly teaches that the color feature vector (C_i), each C_i represents the number of pixels of color C_i in the block, is a characterization measure that is proportional to the frequency of occupance (how many pixels in the color C_i) in the local histogram of a block. Even if considering percentage of colors of each blocks as Appellant argued, Sato is still anticipated in the sense of inherence because each block (partition) has finite number of pixel (100 pixels for 10x10 block and 64 pixels for 8x8 block) and if color C_1 is 20 (20 pixels have color C_1 in the blocks) then C_1 is 20 percent in the 10x10 block and 20/64 percent in the 8x8 block (Fig. 42A and 43, col. 25, lines 46-62). Those teachings are the same as those in claims as well as in the specification (see the specification, page 6 line 22-page 7 line 16).

Finally, regarding to the argument of “index table contains names of blocks only, does not contain a measure that is proportional to frequency of occurrences of a color,”, Sato’ index table contains C_i as an index (Fig. 45) in order to compare C_1 in a region of an input image with C_1 of region 1 in image 1 and C_1 of the region 2 in image 2 which previously stored in the table (Figs. 44-45, col. 25 line-col. 26 line 18, note that using the threshold to filter small colors may not affect the result of comparison and also reduce the cost of computation). As discussed above, color C_i is the characterization measure proportional to the frequency occupance of a block, thus, Appellant’s assertion is wrong.

Therefore, claims 1-5 and 11-15 are rightly rejected under 35 U.S.C. §102 as being

anticipated by Sato et al.

2. Appellants' arguments -- Appellant argues that regarding claims 6-10 and 15-20, 1) Sato teaches the comparison of two images by a comparison of regions of an input image to an index table. ---- The output of Sato's comparison is the list of candidate images found in the index table -- (Sato, column 26, lines 19-32), ---- an illustrated in Fig. 45, the index table does not contain the proportion of color C1 in each regions, and thus the comparison process of Sato **can not** compare the proportion of color in the input region to this **unknown** proportion in each identified regions.” ; and 2) “Because Sato does not store the frequency of occurrences of each color in each partition in the index table, Sato can not be said to effect a comparison of the frequencies of occupancies of select colors in corresponding partitions of two images,”

Examiner's response --The Examiner does not agree with Appellant.

Regarding the argument 1, Appellant's assertion and understanding of Sato is totally wrong. Fig. 45 and column 26, lines 19-32 of Sato cited by the Appellant is not the retrieval scheme of comparison of input image and reference images. The portion discussed by the Appellant is only related to how to build up the index table of images in a database and the Appellant wrongly asserts that the color is not stored in the index table. Sato discusses the retrieval operation in col. 27 lines 15-25 that compares selected candidates “using methods in first and fifth embodiment”. The first embodiment of Sato discloses the scheme of color information discrimination which calculates the color differences of “the color information of the input designated image and the region description information of image data to be searched” (Fig. 4, col. 8 lines 4-23). By using the retrieval operation described in the first embodiment and the index table of the sixth embodiment, the color feature vectors (frequency of occupance) of the blocks or regions in the designated image will be compared with those of the images in the

database to be searched. All images to be searched in the database will be undergone “a primary screening operation” and an image or images similar to the designated image will be retrieved. Therefore, the claims 6-10 and 15-20 are rightly rejected under 35 U.S.C. §102 as being anticipated by Sato et al.

Sato also teaches a color index scheme for indexing images in a database in seventh and eighth embodiments and the color index can be used as a search key to retrieve an image in the database when comparing with a designated image (an input image) (Fig. 49 col. 27 line 28-col. 28 line 27). The color index scheme is described as extracting the representative colors of the respective regions and mapping the colors into the HSV color space. The mapped volume (either spheres or blocks) is used as color index and then compares the indices of regions in designated image and image to be searched for determining the similar color regions (Fig, 49, 51-54, col. 27, line 28-col. 30 line 40). The mapped volume in color space is known to the frequency of occupancy of a select set of colors in the color space. Thus, the seventh and eighth embodiments are also disclosed all limitations of claims 6-10 and 16-20.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted

JINGGEWU
PRIMARY EXAMINER
Jingge Wu

April 5, 2003

Appeal Conferees:

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